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(54) Title: METHODS FOR CONTROLLING PROLIFERATION OF CELLS

(57) **Abstract:** An isolated nucleostemin polypeptide is disclosed herein. The nucleostemin polypeptide includes an amino acid sequence at least 85% identical to SEQ ID NO:2. In several examples, the polypeptide regulates cell differentiation, cell proliferation, or both. Nucleic acids encoding these polypeptides, vectors including the nucleic acids, and host cells transfected with these nucleic acids are also disclosed. Methods for inducing differentiation, inhibiting proliferation, and inducing senescence of a cell by altering the level of a nucleostemin polypeptide including an amino acid sequence at least 80% identical to SEQ ID NO: 2 are also disclosed. Methods for screening for agents that affect proliferation, differentiation. Or senescence of cells are also disclosed.

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